The Stryker Brigade Combat Team is a medium weight armored vehicle force that the Army is developing to fill the current operational gap between its heavy and light forces. (U.S. Army photo by Staff Sgt. Marcia T. Hart)

The Army's First ADAM Cell

No air and missile defense fire units are organic to the Army's new Stryker Brigade Combat Team, but the Air Defense Airspace Management Cell plays a crucial role

by Capt. Scott L. Mace

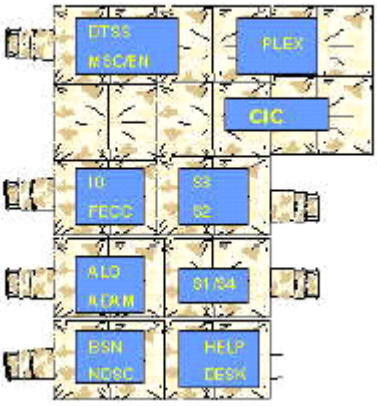
As the Army makes the transition to the fighting force of tomorrow, it has created different types of sections within our brigades. This gave birth to the Air Defense Airspace Management Cell or ADAM Cell in the new Stryker Brigade Combat Team (SBCT). The ADAM Cell consists of six personnel and is the only organic air defense element in the SBCT. There are no air and missile defense fire units or radars organic to the SBCT. The ADAM Cell is part of the SBCT main tactical operations center (TOC) and is a critical link to the maneuver commander in the new lighter and more lethal brigade combat team.

The ADAM Cell has brought to the fight a wide array of systems that will dramatically change the way a brigade sees its air picture on the battlefield. This is a huge step up from the days of Forward Area Alerting Radars and calling out grid squares and directions for the brigade's early warning. This article is an overview of the first of six SBCTs that the Army will stand up. The intent of this article is to provide a brief overview of how the ADAM shelter is integrated into the SBCT TOC, the setup of the shelter area itself, and the types of systems and radios used.

The ADAM Cell is part of the SBCT TOC. It is configured on the back of an M-1113 heavy chassis High-Mobility, Multi-Purpose Wheeled Vehicle (HMMWV) that has a stronger load capacity than the normal HHMWV. It allows for vehicle ease of operation and has the ability to carry more weight and increased power when pulling heavy loads with the ADAM's equipment. The ADAM Cell is protected against nuclear, biological or chemical (NBC) attacks by an NBC-capable rigid wall shelter (RWS), with power connections along both sides to allow LAN connections and antenna inputs from a myriad of required antennas. The cell's location in the TOC allows for quick and easy communication with other cells.

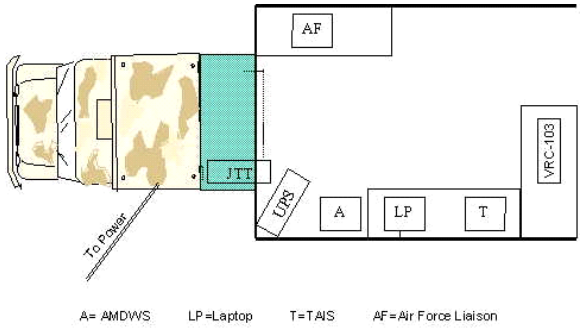
In addition to the shelter, the ADAM Cell's equipment consists of a standard M1097 HMMWV support vehicle, a 10kw generator, and a High Mobility Trailer (HMT) that can carry a 1-1/4 ton load. These vehicles carry the cell's personnel and extra equipment. Personnel in the cell include an ADAM officer in charge (OIC) air defense captain, an aviation captain, a 140A (warrant officer systems integrator, one 14J30 (E6, air defense early warning systems op-

erator), one 14J20 (E-5, air defense early warning systems operator) and one 93P40 (E-7, aviation operations).



Brigade Tactical Operations Center

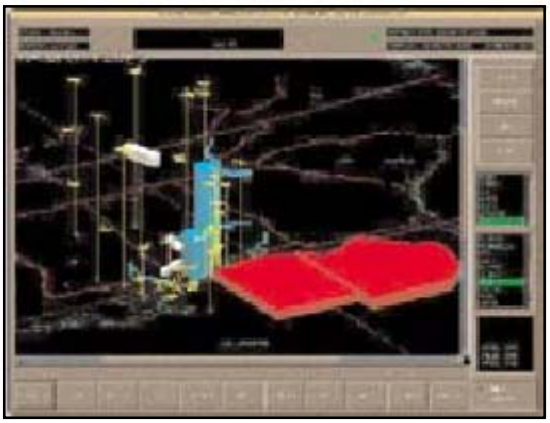
The ADAM Cell represents a big jump in technology. Four computer systems monitor the overall air picture of the SBCT area of responsibility and the theater of operations in which the SBCT may find itself. There are also 12 radio systems that provide a complete array of redundant communication capabilities as they establish and maintain the air picture.



ADAM Shelter Layout

The shelter is laid out in a very user-friendly design. It is easy for the users to move back and forth inside the tent area to observe the various systems as they are being used. In our ADAM shelter, we share the space with the Air Force liaison officer (ALO). Next to the ADAM shelter is the Fire and Effects Coordination Cell (FECC). This means that all of the airspace users are collocated for immediate airspace management and synchronization. The ALO can turn and report that there are friendly aircraft inbound, and the FECC section can request airspace clearance quickly and with minimum time lost.

The Tactical Airspace Integration System (TAIS), one of four processors within the ADAM Cell, provides the ability to manage airspace de-confliction in the cell. This is done in a matter of seconds as opposed to minutes. For example, this system can be used in conjunction with a fire mission from a Field Artillery unit to re-route aircraft through a different corridor and prevent losses to friendly fire. A request comes to the cell and the TAIS operator can generate a 3-D picture of the airspace in question and immediately know if there is any conflict with friendly air. This is all performed in a matter of seconds. This powerful machine does all of the work for the operator. It receives a text message copy of the airspace coordination order (ACO) from the higher Air Force Air Operations Center (AOC) or the Army's Battlefield Coordination Detachment (BCD) then parses (converts) the ACO into a graphic format, and displays it on the flat screen. This keeps the operator from having to manually input the airspace control measures onto the map overlays. An operation that took several man-hours to complete, now takes seconds.

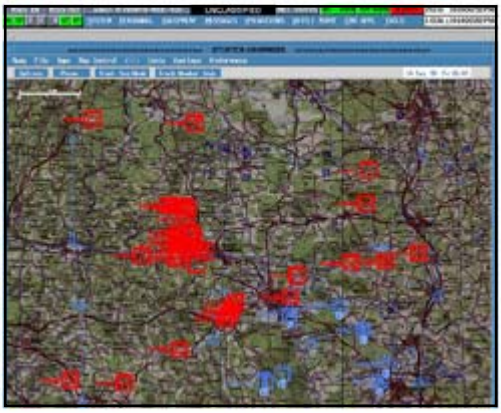


TAIS 3-D Screen

The Air Defense System Integrator (ADSI) provides three functions to the cell. First, it provides routing capabilities to support TADIL A, B and J. It also provides the capability to receive intelligence information from the Integrated Broadcast System (IBS), specifically from TIBS and TDDS. Finally, it also provides a set of command and control functions to the crew of the ADAM Cell.

A standard forward area air defense (FAAD) C2 processor also provides the cell the ability to manage air defense engagements and early warning. Specifically, it provides the Army's FAAD data link (Sentinel radar picture) and controls the air and missile defense engagement operations. The fourth processor is the Air and Missile Defense Work Station (AMDWS). The AMDWS is one of the original five Army Battlefield Command Systems (ABCS). It provides the air and missile defense force planning and operations for the ADAM Cell.

There are several radio systems in the ADAM shelter that add a high degree of communications ability. The VRC-92 and VRC-90 SINCGARS ASIP radios provide voice communications throughout the SBCT. For C2, thes radios



AMDWS Screen

also provide the data link between the ADAM Cell and the Sentinel Radar Section for the FAAD data link (FDL) picture. The PSC-5 radio provides both voice and data C2 in the UHF satellite band. This is primarily for SBCT operations and intelligence; specifically, it allows the SBCT to receive tactical ballistic missile (TBM) alerts.

The Harris 150 radio system (HF voice) is primarily used to support the aviation battalion flight operations net. The MacKay radio system (HF data) is used to gain access to the TADIL-A link. The VRC-103 can also be used as an Aviation battalion flight operations radio operating in multiple band frequencies in HF and UHF bands.

The Joint Tactical Terminal (JTT), operating in the UHF band, provides access to the IBS for the receipt of satellite intelligence and targeting information. The Joint Tactical Information Data System (JTIDS) provides the shelter with access to the TADIL-J network for air tracks while operating in the UHF band. The LST-5 radio operates in the UHF satellite band to provide access to the TADIL-A network for air tracks. An Enhanced Position Location Reporting System (EPLRS) radio, which operates in the UHF band, can communicate with the air defense network.

The redundancy of the shelter is apparent with all of the radio and computer systems operating in the cell. This provides the cell with the ability to use alternate means to provide support to the maneuver commander.

There is also an internet communication device (Access Net) in the TOC that allows for easy and efficient information flow. It is a very user-friendly device that can be programmed within a few minutes to monitor any net. It controls all of the radio systems in the ADAM Cell. It is easy to monitor either one net or many nets using the touch screen device to navigate between the systems. You can push a button and switch from radio to radio without leaving the workstation. This includes monitoring and communicating on the HF, Satellite Communications (SATCOM) and SINCGARS ASIP radios. The headphones that are used with Access Net have noise canceling technology, allowing the user to communicate without noise interference.

There are also many little things that provide for increased operating potential. There is a color printer mounted inside of the shelter that allows for quick printing of documents. During the I Corps Warfighter 02 exercise at Fort Lewis, the cell could quickly print out an enemy air chart to identify a potential airstrip or landing zone to the S-2 or to brief the brigade commander.

There are extra ports on the network hub to allow plugging in a laptop. This allows the user of the AMDWS to take a snapshot of the screen. The cell could go into the AMDWS from the laptop, retrieve the snapshot and put it into a slide without the AMDWS user having to take the time to do the operation. This allows easier updates of information during battle update briefs to the brigade commander. The ability to insert a picture into the update brief helps explain enemy rotary- and fixed-wing, unmanned aerial vehicle (UAV) and TBM activities. There is also the ability to push the AMDWS screen to the brigade commander's screen and allow the commander to see the same screen the AMDWS operator is viewing.

According to Col. Michael Rounds, 3rd Brigade commander for the Army's first Stryker Brigade, the ADAM Cell has four primary tasks in support of SBCT operations. First, is providing a "clear picture of both the friendly and hostile aircraft" to the brigade. "Having Sentinel radars in

The ADAM Cell is configured on the back of an M1113 heavy chassis High-Mobility, Multipurpose Wheeled Vehicle with a stronger than normal load capacity.

Stryker soldiers dismount during a Stryker Brigade Combat Team deployablity demonstration.

the SBCT" to accomplish this mission is critical as it helps us to see ourselves "from within" as we fight with our own lift and transport aircraft. Second is the ability to integrate analog air defense units into our digital operations.

In the near term, most SBCT air defense augmentation will be from analog units. Our ability to "plug" an analog unit into the brigade was demonstrated during the recent I Corps Warfighter 02 exercise. The 111th ADA Brigade, a New Mexico Army National Guard Patriot unit, successfully communicated with the SBCT through an I Corp-provided digital bridge. The ADAM Cell was able to combine the air defense priorities of the SBCT with the capabilities of the 111th ADA Brigade to ensure proper air defense coverage for the SBCT. A third expectation of the ADAM Cell is to participate in the "parallel and collaborative planning process" with both higher and lower echelons of command. The ADAM Cell "is the subject-matter expert" and has to coordinate a common ADA posture in the SBCT. Finally, the overall management of Army Airspace Command and Control (A2C2) for the SBCT is a very important mission of the ADAM Cell.

When asked if there were any issues with the ADAM Cell in the SBCT, Rounds said he would like "to have organic sentinel radars in the SBCT." It only adds to his overall air picture. He continued by saying that augmentation of air defense assets from other units would need to be wheeled assets to maintain "functionality and speed" of the SBCT. He would like to see Strykers with Stinger teams in the SBCT or Infantry squads that carry Stingers with them. This would increase the SBCT's effectiveness against potential air defense threats. In closing, he said he feels the ADAM Cell is a valuable asset to the brigade.

On April 11, 2003, the Army's first SBCT ended several weeks of rigorous day and night training April 11, 2003, during Arrowhead Lightning I at the National Training Center (NTC). It is now preparing for Arrowhead Lightning II May 18 at the Joint Readiness Training Center to certify its operational readiness.

During Arrowhead Lightning I, the ADAM cell provided situational awareness to the brigade commander throughout the rotation. It was good to show the Blue combat air support missions flying into our area of operations and be able to work targets from our AMDWS screen. The Air Force observers/controllers had not seen that done before. The battery commander and the ADAM Cell OIC work together, so we were able to create an air defense plan that allowed us to kill 16 of 17 Hinds from training day six to 11. The commanding general of the NTC stated that this was a tremendous credit to the unit. Half of the targets killed were killed by Combined Arms For Air Defense (CAFAD) assets. This is considered a credit to air defense since it is our responsibility to provide early warning to the SBCT.

The Arrowhead Lightning I training was good, but still did not flex the full capabilities of the ADAM Cell. The good news story is that we were able to use the systems we had to conduct a successful rotation. Given a real operational tasking, we would have been allowed to use all of our equipment and would have been able to provide an even better picture of the airspace over the brigade to the commander and the maneuver forces.

There were several lessons learned at NTC, and we added tactics, techniques and procedures that helped us improve our operational readiness for the Arrowhead Lightning II certification exercise in May 2003 at the Joint Readiness Training Center (JRTC).

We certainly showed SBCT evaluators that air defense is a valuable asset and should be an organic part of the SBCT. The brigade commander wants to include ADA units in all

The ADAM Cell completed its certification during Arrowhead Lightning I and II rotations at the National Training Center and Joint Readiness Training Center.

of his exercises. Soldiers who operate the ADAM Cell strive hard to represent our Air Defense Corps by putting on a good show for the combined arms team.

The ADAM Cell completed its certification on May 28 at Fort Polk, La. During the JRTC rotation the A2C2 portion of the cell improved dramatically from the NTC rotation. There was an augmentation from the Mississippi National Guard that helped the brigade in this area. The two of us working together provided a great picture of the air to the brigade. We helped to deconflict hundreds of hours of flight times with artillery, combat air support and UAV's.

One of the hardest parts for us to work on was the air control measures down to the mortar crews across the brigade. It was difficult to make sure they were not firing through controlled and occupied airspace, since the mortars were controlled at company level and could be firing in any direction at any time. We worked on pushing the ACM graphics to the mortar point. The OC's were very happy with the way we controlled the airspace and were able to view it live as we deconflicted airspace.

From the ADA side, we had less of a mission then at NTC. We only had two Sentinel radars with us. We used them to help fill in the picture that sometimes was not present from the simulated higher feed. It was good to include the ADA side in our certification. It has helped the process of accepting an ADA unit into a unit that does not have an organic ADA unit. In my experience, it is easy to miss the little questions that need to be asked when accepting augmentation from another unit. It is helping us to refine our SOP's to allow for easier augmentation; the more pain we experience in training, the less we will have when we do it for real.

We are preparing for future deployment possibilities as the current world situation develops. We are currently updating our SOP's, reconfiguring our equipment and fixing all the problems we found to allow us a smooth transition into an operational ready state.

Overall, the ADAM cell is not completely ready for deployment, but will be in the next 30 to 60 days. We will complete the recovery from our busy schedule and continue to prepare for our pending deployment. NTC and JRTC were truly a learning experience for all of the members of the ADAM Cell and it is good to have completed the tasks for certification. As we move forward into what the Army of the future holds for us, we will use the lessons learned from the rotations to provide the best picture possible of the air threat and the freedom of movement for our own aircraft through our airspace. Today the ADAM Cell is taking the steps to set up future ADAM Cells in the SBCT's for success.

The ADAM Cell is a significant addition to the SBCT. It adds a new dimension to the air defense mission in an ever-changing threat environment. The multi-functional abilities of the ADAM Cell allow for greater flexibility to support the SBCT throughout its diverse mission profile. With this cell in the SBCT, we have the ability to receive the air picture from all branches of service and some of our allies as they produce a picture. From the Aegis Cruiser in the Navy, the Patriot missile system in the Army and the Airborne Warning and Control System (AWACS) aircraft flying overhead, the ADAM Cell provides large amounts of information never before available to the brigade commander. As we continue to transform into a lighter and more lethal force, air defense must continue to change its way of doing business to keep itself effective in the future. The ADAM Cell is leading the way.

Assigned to 3rd Brigade, 2nd Infantry Division, Stryker Brigade Combat Team, Capt. Scott Mace serves as the ADAM Cell Officer in Charge.